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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,235	12/31/2003	Jerome Maillot	1252.1079	7111

21171 7590 08/23/2006

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EXAMINER

BROOME, SAID A

ART UNIT	PAPER NUMBER
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2628

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/748,235	MAILLOT, JEROME	
	<b>Examiner</b>	<b>Art Unit</b>	
	Said Broome	2628	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-17 and 32-34 is/are allowed.
- 6) ☒ Claim(s) 18,20,23,24,27,30,31,35 and 36 is/are rejected.
- 7) ☒ Claim(s) 19,22,25,26,28 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Allowable Subject Matter***

Claims 1-17 and 32-34 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art, Yamrom (US Patent 6,249,287) and Glassner ("*Spacetime Ray Tracing for Animation*"), do not teach the limitations of claim 1. Yamrom teaches finding an intersection with an original mesh surface in column 1 lines 46-48. Glassner teaches finding an intersection with the surface of a three dimensional object, as illustrated in Figure 2. Glassner also teaches determining an intersection by using an outer bounding surface on page 61 second column fourth paragraph lines 1-5, a tight inner surface that is both bounded by the outer bounding surface and wraps the original surface of the three dimensional object in Figure 3. However, none of the prior art teaches or suggests a first tessellation linking the tight inner surface to the original mesh surface and a second tessellation linking the bounding surface to the tight inner surface, as recited in claim 1.

The prior art, Yamrom (US Patent 6,249,287) and Glassner ("*Spacetime Ray Tracing for Animation*"), do not teach the limitations of claim 32. Yamrom teaches finding an intersection with an original mesh surface between a ray and the mesh surface in column 1 lines 46-48. Glassner teaches finding an intersection with the surface of a three-dimensional object, as illustrated in Figure 2. Glassner also teaches determining an intersection by using an outer bounding surface on page 61 second column fourth paragraph lines 1-5, and a convex hull or tight inner surface that is both bounded by the outer bounding surface and wraps the original surface of the three dimensional object, as shown in Figure 3. However, none of the prior art

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teaches or suggests a bounding mesh bounding the original surface mesh and with low resolution relative to the original mesh surface, and a mesh of polyhedrons constrained to the original mesh surface and constrained to the original mesh, where polyhedrons with shared faces generally decrease in size in the direction of the original mesh surface, as recited in claim 32.

The prior art, Yamrom (US Patent 6,249,287) and Glassner ("*Spacetime Ray Tracing for Animation*"), do not teach the limitations of claim 34. Yamrom teaches finding an intersection with an original mesh surface between a ray and the mesh surface in column 1 lines 46-48. Glassner teaches finding an intersection with the surface of a three-dimensional object, as illustrated in Figure 2. Glassner also teaches determining an intersection by using an outer bounding surface on page 61 second column fourth paragraph lines 1-5, and a convex hull or tight inner surface that is both bounded by the outer bounding surface and wraps the original surface of the three dimensional object, as shown in Figure 3. Glassner also teaches traversing adjacent intersected polygons or polyhedrons, as illustrated in Figure 3, starting from a first intersection until an intersection is found on pg. 61 left column 6<sup>th</sup> paragraph lines 2-6 – right column 1<sup>st</sup> paragraph lines 1-2. However, none of the prior art teaches or suggests a first tessellation linking the convex hull to the original mesh surface, and a second tessellation linking the bounding surface to the convex hull, where the second tessellation tessellates a space between the bounding surface and the convex hull surface, and where the first tessellation tessellates a space between the convex hull surface and the original surface mesh, as recited in claim 34.

***Claim Objections***

Claims 19, 22, 25, 26, 28 and 29 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 18, 20, 23, 24, 27, 30, 31, 35 and 36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 18, 20, 23, 24, 27, 30, 31, 35 and 36 recite various methods, however no tangible result is produced. Therefore, the claimed invention does not possess “real world” value. The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. *Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had “no substantial practical application.”).

In *State Street*, the Federal Circuit examined some of its prior section 101 cases, observing that the claimed inventions in those cases were each for a “practical application of an abstract idea” because the elements of the invention operated to produce a “useful, concrete and

tangible result.” State Street, 149 F.3d at 1373-74, 47 USPQ2d at 1601-02. For example, the court in State Street noted that the claimed invention in Alappat “constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), because it produced ‘a useful, concrete and tangible result’—the smooth waveform.” Id. Similarly, the claimed invention in Arrhythmia “constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), because it corresponded to a useful, concrete and tangible thing—the condition of a patient’s heart.”

Applicant is advised that should claim 20 be found allowable, claims 18, 27, 35 and 36 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The references made of record as prior art pertain to ray object intersections of bounding volumes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Broome *SB*  
8/18/06

  
ULKA CHAUHAN  
SUPERVISORY PATENT EXAMINER